Extron Electronics

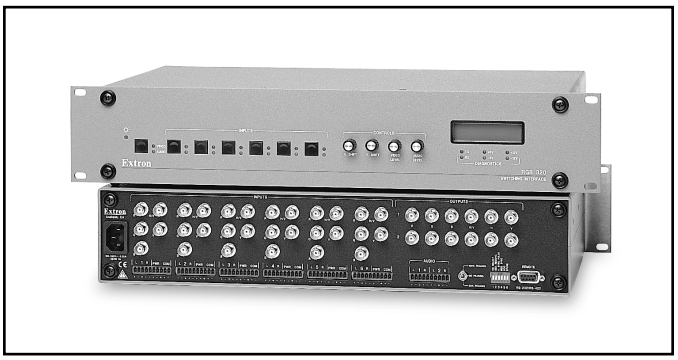
INTERFACING, SWITCHING AND DISTRIBUTION

THE RGB 320 ARCHITECTURAL SERIES INTERFACE SYSTEM

- Virtual interfacing
- Show me button
- Remote connection
- Two gang face plates
- RS-232/422 controllable
- RGsB, RsGsBs, RGBS and RGBHV
- Video & audio level adjustments
- 220 MHz (-3db) bandwidth
- Aesthetic appeal
- Central interface management
- Digital display sync processing
- System diagnostics
- Peaking controls
- Horizontal & vertical centering
- Audio gain & attenuation
- 100 memory blocks
- Audio follow & breakaway

SERVICE SUPPORT SOLUTIONS

Applications



RGB 320

Extron's **RGB 320** is a 220 MHz (-3dB) system interface with a built-in six input, two output switcher. The RGB 320 is designed as a solution for permanent installation environments where multiple interface inputs are required, such as in conference rooms or command & control centers. The RGB 320's six inputs are compatible with RGsB, RsGsBs, RGBS, RGBHV and unbalanced stereo audio. The two outputs provide for the use of, for example, a projector and a preview monitor without a distribution amplifier. As the center of the interface system, the RGB 320 switches and processes video and audio signals that it receives from the remote buffers, which is then output to the main display. This architecturally defined system encourages the use of advanced technology for the purpose of computer-driven, multimedia and interactive presentations.

The RGB 320 works in conjunction with accompanying buffers, including the RGB 322, RGB 324, RGB 326, and RGB 340. These buffers may be mounted discreetly around a room to serve as points of input to the RGB 320. With this system, A/V installations may be customized to use up to six buffer modules with one RGB 320 to control all computer-generated video and audio inputs. For larger systems, multiple RGB 320s may be used together with a separate switcher and an external control system to route output signals to displays.

All of the actual interface functions are processed through the RGB 320, however virtual interfacing is possible via any of the aforementioned buffer modules, save the RGB 326. Virtual interfacing offers signal adjustment capabilities including horizontal and vertical shift, audio level, or video level depending on the buffer model. The RGB 320 processes these adjustments and then saves them to memory.

The RGB 320 has fifteen programmable memory blocks per input, which are used to store all image settings. When a computer is selected, the RGB 320 automatically recalls the input settings for that computer's video frequencies. Thus, it is not necessary to re-calibrate the settings each time a specific computer is selected. Additionally, ten of the most popular computer horizontal and vertical frequency settings are permanently programmed into the RGB 320's memory so additional configuration may not be necessary at all.

A primary goal for many professional A/V installations is to design a system that is streamlined and aesthetically appealing. That is why Extron developed the RGB 320 to fit into a rack, out of the way, with other A/V components. The RGB 320 System buffers are designed to be installed anywhere that someone may need interface access, without having an interface "box" sitting out in plain sight. The RGB 322, RGB 324 and RGB 326 buffers may be mounted into walls, podiums, conference tables, or through any other flat surface. They are available with grey, black or white faceplates to further help them blend in with the surrounding environment. For the flexibility of placing an interface under a flat surface instead of through one, the RGB 340 buffer will provide access while mounted unobtrusively out of sight.

Extron's RGB 320 has premium features that help to maintain original signal integrity and enhance overall system performance. Peaking is provided to compensate for high frequency loss due to cable capacitance and system bandwidth loss, similar to the sharpness control on a data monitor. The RGB 320 also provides DDSP™ – Digital Display Sync Processing – ensuring a stable image for LCD and DLP presentation devices.

Applications (Cont.)

Controlling the RGB 320 can be done either with the front panel control buttons or through the buffers via "virtual interfacing," RS-232, contact closure, or Extron's PC-based Control Program software. An RS-232 serial port enables control via a third party control system such as AMX, Crestron, or contact closure remote control. With Extron's Control Program software you can also control the RGB 320 from a remote PC using graphical icons and easy to follow programming features.

Features

- **High Bandwidth –** The RGB 320 provides 220 MHz (-3dB) of video bandwidth for effective transmission of high resolution computer video and audio signals.
- **Aesthetic Appeal –** Extron designed the RGB 320 to be discreetly placed into a rack, out of the way, with other A/V components for clean system integration.
- **Central Manageability –** The RGB 320 interfaces and switches input sources from buffers throughout the room to two displays for professional presentations.
- **RS-232 Controllable –** Allows for third party control system integration via the RS-232 serial port.
- **Universal Compatibility –** The RGB 320 accepts RGsB, RsGsBs, RGBS and RGBHV video signals ensuring compatibility with all types of computer inputs.
- **Rack Mountable –** Extron's RGB 320 is housed in a standard 19" wide, 2U high metal, rack mountable enclosure and includes all mounting hardware.
- **Front Panel Control –** All controls are operational via the front panel control buttons.
- **DDSP™ Digital Display Sync Processing –** Provides image stability for all CRT, LCD, DLP and plasma projection devices.
- **System Diagnostics –** The RGB 320 monitors system operations and displays horizontal and vertical frequency as well as control adjustment data via LED readout.
- **Peaking –** Extron's RGB 320 has peaking control to maintain original signal integrity over long cable runs.
- **Horizontal & Vertical Centering –** Horizontal and vertical centering capabilities ensure that the display image will appear as desired.
- **Audio Gain & Attenuation –** Audio levels may be set for each input in increments of 1 dB, from –15 dB to +9 dB.
- **Video Levels –** Extron's RGB 320 provides adjustment for all RGB video levels via the front panel buttons or remote PC with RS-232 control.
- **Memory Blocks –** Ensures that settings are saved for horizontal and vertical centering as well as audio and video levels for the multiple computer inputs.
- **Audio Follow & Breakaway –** The RGB 320 allows audio signals to either follow or breakaway from each selected video signal, providing greater presentation flexibility.
- **Metal Enclosure –** The RGB 320 is enclosed in a 2U high, 19" wide metal enclosure.

Specifications

Video input

Number/type	6 analog RGBHV, RGBS, RGsB, RsGsBs
Connectors	5 BNC female x 6
Nominal level(s)	Analog -- 0.3V to 1.45V p-p
Impedance	75 ohms
Horizontal frequency	15 kHz to 150 kHz (optimum 15 kHz to 62 kHz)
Vertical frequency	30 Hz to 170 Hz
Return loss	-30dB @ 5 MHz

Video throughput

Routing	6x1, 2 distributed outputs
Gain	0.5 – 1.45V p-p Peaking – 0%, 50%, 100% (switch selectable)

SPECIFICATIONS (Cont.)

Bandwidth	220 MHz (-3dB)
Video output	
Number/Type/Format	2 analog RGBHV, RGBS, RGsB
Connectors	2 x 6 BNC female
Nominal level	0.5 – 1.45V p-p
Impedance	75 ohms
Return loss	-30dB @ 5 MHz
Sync	
Input type	Autodetect RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV at all times RGBS at all times RGsB switch selectable
Input level	2.0V p-p to 5.5V p-p with +0.2VDC offset max.
Output level	4.0V to 5.0V p-p
Input impedance	10 k Ohms
Output impedance	75 Ohms
Max. Propagation delay	88 nS, measured
Max. rise/fall time	3.2 nS, measured
Polarity	Positive, Negative
Audio input	
Number/type	6 stereo, balanced / unbalanced
Connectors	3.5 mm captive screw terminal, 5 conductor
Impedance	Balanced: 25k Ohm, DC coupled Unbalanced: 50k Ohm, DC coupled
Maximum level	+19.5dBu, balanced or unbalanced
Input gain adjustment	-15.0dB to +9.0dB, adjustable per input
Audio throughput	
Routing	6x1, 2 distributed outputs
Gain	Unbalanced: 0dB; balanced +6dB
Response	±0.05dB 20 Hz to 20 kHz
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20kHz +15dBu input, +21dBu output Balanced input and output
S/N	>90dB, output 21dBu, balanced
Adjacent input crosstalk	>65dB typical @ 20kHz, >80dB typical @ 1kHz, >80dB typical below 60 Hz
Stereo channel separation	>80dB @ 1kHz, >60dB @ 20kHz
CMRR	>75dB 20Hz to 20 kHz
Audio output	
Number/Type	2 stereo (2 channel), balanced / unbalanced
Connectors	2 3.5 mm captive screw terminal, 5 conductor
Impedance	Unbalanced 50 ohms, balanced 100 ohms
Gain error	±0.1dB channel to channel
Drive (HI-Z)	> +21.0dBu, balanced at stated %THD+N
Drive (600 ohm)	> +15.0dBm, balanced at stated %THD+N
Control/Remote — (switcher/interface/Extron device)	
Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Pin configurations	2 TX, 3 RX, 5 GND
Contact closure	9-pin female D connector
Pin configurations	1 input 1, 4 input 2, 5 GND, 6 input 3, 7 input 4, 8 input 5, 9 input 6
Program control	Extron's Simple Instruction Set – SIS™ Extron's Windows® Control Program
General	
Power	100VAC to 240VAC, 50/60 Hz, 20 Watts, internal, auto-switchable
Temperature/Humidity	Storage -40° to +158°F (-40° to +70°C) / 10% to 90% Operating +32° to +122°F (0° to +50°C) / 10% to 90%

SPECIFICATIONS (Cont.)

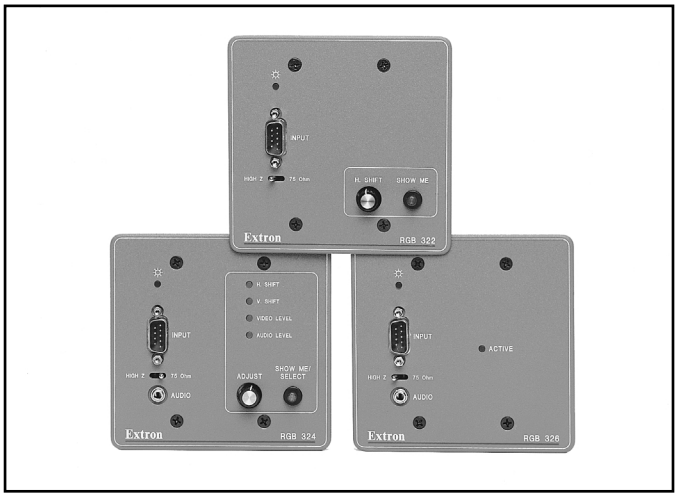
Rack mount	Yes
Enclosure type	Metal
Enclosure dimensions	3.5" H x 17" W x 9.5" D 8.9 cm H x 43.2 cm W x 24.1 cm D
Shipping Weight	15 lbs. (6.75 kg)
DIM weight	25
Vibration	NSTA 1A in carton (National Safe Transit Association)
Approvals	UL, CE, FCC Class A
MTBF	30,000 hours
Warranty	2 years parts and labor

INTERFACE BUFFERS

The RGB 322, RGB 324, RGB 326, and RGB 340 provide remote access for analog video sources to the RGB 320 switching interface. These four buffers provide a variety of choices as to the interfacing features available remotely, while still maintaining the discreet, aesthetically appealing appearance that all of Extron's Architectural Series interfaces and interface buffers were designed for.

All four interface buffers share several features in common. All provide 300 MHz of video bandwidth, assuring that signal integrity is maintained from the source device, through the buffer, and on to the RGB 320. Each buffer uses a 9 pin input connector compatible with all computers that output RGsB, RsGsBs, RGBS and RGBHV. For compatibility with pre-terminated laptop breakout cables, all buffers provide a variable termination switch, capable of 75 ohm termination at the buffer or allowing signals to pass through without termination. For overall system integration, the RGB 320 and all of its buffers may be controlled via the RGB 320's RS-232 port, which in turn may be used by a third party control system or Extron's PC-based Control program software.

The RGB 322, RGB 324 and RGB 326 are all constructed onto a two gang wall plate that may be integrated into a wall, conference table, podium, desk, or anywhere else for a neater, more aesthetically pleasing alternative to the "box" style of interfaces. These three buffers are available in grey, white or black faceplates to further help them blend in with their surroundings.



RGB 322, 324 & 326

RGB 322

The **RGB 322** is more than just a remote port that gives access to the RGB 320. This interface buffer offers several Virtual Interfacing features, which give the user the ability to make adjustments to the interface itself. These adjustments are saved

RGB 322 (Cont.)

to the RGB 320's memory without the user having to leave the buffer location. This ability is what makes the RGB 320 System work fluently, as every user may interact with the main display from the buffer locations. The RGB 322 allows the user to select their own buffer as the RGB 320's current input via the "show me" button, as well as to access the horizontal shift of the displayed image.

Features

- **Virtual Interfacing –** Allows for horizontal shift adjustment of the image, which is processed on the RGB 320. The RGB 320 then implements and stores these adjustments in memory.
- **Show Me Button –** Users may remotely select their own buffer to become the active input source and via the RGB 320, display their information on the presentation devices.
- **Two Gang-sized Faceplate –** The RGB 322 faceplate is offered in grey, black and white so that he buffer is discreet and blends better with the surrounding environment.
- **RS-232 Controllable –** The RGB 322 is RS-232 controllable via the RGB 320 for overall system integration.
- **Installment Flexibility –** The RGB 322 buffer is modular, designed to fit into walls, desks, tables, podiums or any other place where an input connection is necessary.
- **Universal Compatibility –** The RGB 322 outputs RGsB, RsGsBs, RGBS and RGBHV video signals ensuring compatibility with all types of analog computer inputs.
- **Variable Termination –** The RGB 322 will terminate the incoming video signal at 75 ohms or allow the signal to pass without termination for use with Extron laptop and monitor breakout cables.

RGB 324

The **RGB 324** expands upon the Virtual Interfacing features introduced in the RGB 322, giving the user control of features that would normally require adjustment at the RGB 320 itself. Horizontal and vertical adjustments provide the user with a properly centered image without the need to adjust the display device or the RGB 320. Video and audio leveling not only provide convenient brightness and volume controls respectively, but will also compensate for drops in signal strength as a result of lengthy cable runs. All of these adjustments are selected via the "show me" button, adjusted at the buffer, and then stored in the RGB 320's memory. The RGB 324 also provides balanced audio conversion to unbalanced audio signals, which helps to avert losses in audio signal integrity due to noise picked up between the buffer and the RGB 320.

Features

The RGB 324 includes all of the features of the RGB 322 as well as the following:

- **Vertical Centering –** The RGB 324 adds several Virtual Interfacing features including the vertical movement of the source image for a centered presentation display.
- **Balanced Audio Conversion –** Unbalanced audio is converted to balanced, allowing for longer cable runs that acquire little or no signal noise.
- **Video Level –** The RGB 324 allows for the boosting of the source video signal to compensate for long cable runs that may affect image brightness.
- **Audio Level –** The volume RGB 324 allows the user to boost the audio signal from the buffer; not only compensating for long cable runs, but providing a convenient volume control.
- **Show Me Button –** With the RGB 324, the show me button not only selects the buffer as the RGB 320's current source, but also selects the Virtual Interfacing feature to be adjusted.

RGB 326

The **RGB 326** is an executive-style buffer that has been designed to provide a "hands free" option when used in conjunction with the RGB 320. With minimal control capabilities at the buffer, the RGB 326 is perfect for applications where many different people have access to the presentation environment and equipment. An "executive style" buffer ensures that after the user connects a laptop or computer to the buffer, the information that is to be displayed will be selected or adjusted at the appropriate time and for the desired duration. In this type of environment there is no need for the user to make input selections or control adjustments directly, since these controls are accessed from the RGB 320 itself.

Like the RGB 324, the RGB 326 provides balanced audio conversion to unbalanced audio signals. Like all of the RGB 320 System buffers, the RGB 326 accepts all types of analog RGB signals, ensuring compatibility with al types of analog computer inputs, and provides a 75 ohm termination switch for use with laptop computers.

Features

- **Executive Control –** Reduces the possibility of inadvertent changes and selections by minimizing the available controls.
- **Two Gang-sized Faceplate –** The RGB 326 faceplate is also available in grey, black and white.
- **RS-232 controllable –** Like other RGB 320 System buffers, the RGB 326 is RS-232 controllable via the RGB 320 for overall system integration.
- **Universal Compatibility –** The RGB 326 outputs RGsB, RsGsBs, RGBS and RGBHV video signals ensuring compatibility with all types of analog computer inputs.
- **Variable Termination –** The RGB 326 will terminate the incoming video signal at 75 ohms or allow the signal to pass without termination for use with Extron laptop breakout cables.
- **Installment Flexibility –** The RGB 326 buffer is modular, designed to fit into walls, desks, tables, podiums or any other place where an input connection is necessary.
- **Balanced Audio Conversion –** Unbalanced audio is converted to balanced, allowing for longer cable runs that acquire little or no signal noise.

RGB 340

RGB 340

The **RGB 340** is functionally identical to the RGB 324, and includes complete virtual interfacing features such as vertical and horizontal shift, as well as audio and video level boost. Where it differs from all other buffers is its enclosure. Rather than the two gang-sized wall mount enclosures the other buffers use, the RGB 340 uses a more conventional rectangular design, with the addition of wing-like brackets. These brackets allow the RGB 340 to be mounted underneath any flat surface, such as a tabletop, desk, podium or anywhere else interface

RGB 340 (Cont.)

access is needed. The RGB 340 is designed to physically disappear into the system, while still allowing analog computer-video and audio to be interfaced through the RGB 320 in a way that maximizes convenience and quality.

FEATURES

The RGB 340 includes all of the features of the RGB 324 as well as the following:

- **Under-Desk Mounting Enclosure –** Unlike the other RGB 320 System buffers, the RGB 340's enclosure is designed to be mounted under flat surfaces, including desks, podiums, tables, etc. The RGB 340 is available in grey.

BUFFER SPECIFICATIONS

Video Input

Number/type	1 analog RGsB, RsGsBs, RGBS, RGBHV
Connectors	1 9-pin D male analog for MBC/LBC cable
Nominal level(s)	Analong -- 0.3-1.45 bolts p-p
Impedance	75 ohms or HI Z, switchable (set to 75 ohms if no local monitor is connected)
Horizontal frequency	15 kHz to 100 kHz (optimum 15 kHz to 62 kHz)
Vertical frequency	30 Hz to 170 Hz

Video Throughput

Gain	Unity (0.7V p-p), 15% with 3dB peaking (0.8V p-p), 30% with 6dB peaking (0.9V p-p)
Bandwidth	300 MHz (-3dB)

Sync

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs; TTL buffered to RGB 320 control unit
Connectors	5 BNC female
Input level	3.0V to 5.0V p-p (referenced to ground)
Output level	4.0V to 5.0V p-p
Input impedance	10 kohms
Output impedance	75 ohms
Polarity	Positive, negative

Audio input -- RGB 324, 326, 340 only -- buffered to RGB 320

Number/type	1 PC level stereo (2 channel), unbalanced
Connectors	3.5 mm stereo jack (2 channel), single-ended, tip (L), ring (R), sleeve (ground)
Impedance	10 kohms, DC coupled
Maximum level	+8.5dBu

Audio throughput-- RGB 324, 326, 340 only -- buffered to RGB 320

Gain	Unbalanced 0dB, balanced +6dB
Response	±0.05sB 20 Hz to 20 kHz
THD + Noise	0.03% @1 kHz, 0.3% @20 kHz at rated maximum output drive
S/N	>90dB, output 17dBu, balanced
Stereo channel separation	>95dB @ 1 kHz to 20 kHz

Audio output — RGB 324, 326, 340 only — buffered to RGB 320

Number/Type	1 buffered, stereo (2 channel), balanced/unbalanced
Connectors	3.5 mm captive screw terminal, 10 conductor
Impedance	50 ohms, unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel Drive (into RGB 320 audio input) > +16dBu, balanced at stated %THD+N

General

Power	±8.0VDC, supplied via RGB 320
Temperature/Humidity	Storage -40° to +158°F (-40° to +70°C) / 10% to 90% non-condensing Operating +32° to +122°F (0° to +50°C) / 10% to 90% non-condensing
Rack mount	No, but wall- or furniture-mountable
Enclosure type	Metal
Enclosure dimensions:	
RGB 322/324/326	Plate 4.5" H x 4.5" W (11.43 cm H x 11.43 cm W) Circuit board on plate 2.8" H x 3.5" W x 1.3" D (7.1 cm H x 8.9 cm W x 3.3 cm D) Box 3.75" H x 3.65" W x 3.5" D (9.5 cm H x 9.27 cm W x 8.9 cm D) (2-gang)
RGB 340	1.25" H x 5.7" W x 4.5" D (width including flanges = 6.95") 2.54 cm H x 14.5 cm W x 11.4 cm D (width including flanges = 17.65)
Shipping Weight	3 lbs (0.9 kg)
Vibration	NSTA 1A in carton (National Safe Transit Association)
Approvals	UL, CE, FCC Class A
MTBF	30,000 hours
Warranty	2 years parts and labor

Part Numbers

RGB 320	60-232-01
RGB 322G	60-233-01
RGB 322B	60-233-02
RGB 322W	60-233-03
RGB 324G	60-234-01
RGB 324B	60-234-02
RGB 324W	60-234-03
RGB 326G	60-235-01
RGB 326B	60-235-02
RGB 326W	60-235-03
RGB 340	60-279-01

SPECIFICATIONS (Cont.)

Optional Accessories

Monitor breakout cables

MBC VGA/XGA HR 26-162-01
MBC Mac/Quadra 26-018-02
MBC SUN Sparc HR 26-424-01

Laptop breakout cables

LBC VGA HR 3' 26-224-02
LBC VGA HR 6' 26-224-01
LBC VGA HR 12' 26-224-03

LBC Mac HR 3' 26-363-03
LBC Mac HR 6' 26-363-01
LBC Mac HR 12' 26-363-04

LBC SUN HR 3' (61 kHz) 26-413-04
LBC SUN HR 6' (61 kHz) 26-413-01
LBC SUN HR 12' (61 kHz) 26-413-05

LBC SUN HR 3' (71 kHz) 26-413-06
LBC SUN HR 6' (71 kHz) 26-413-02
LBC SUN HR 12' (71 kHz) 26-413-07

LBC SUN HR 3' (81 kHz) 26-413-08
LBC SUN HR 6' (81 kHz) 26-413-03
LBC SUN HR 12' (81 kHz) 26-413-09

LBC Mac/VGA 35 HR 26-394-01

Laptop breakout cables with audio

LBC VGA HR 3'A 26-441-01
LBC VGA HR 6'A 26-441-02
LBC VGA HR 12'A 26-441-03

LBC Mac HR 3'A 26-442-01
LBC Mac HR 6'A 26-442-02
LBC Mac HR 12'A 26-442-03

LBC SUN HR 3'A (61 kHz) 26-443-01
LBC SUN HR 6'A (61 kHz) 26-443-02
LBC SUN HR 12'A (61 kHz) 26-443-03

LBC SUN HR 3'A (71 kHz) 26-444-01
LBC SUN HR 6'A (71 kHz) 26-444-02
LBC SUN HR 12'A (71 kHz) 26-444-03

LBC SUN HR 3'A (81 kHz) 26-445-01
LBC SUN HR 6'A (81 kHz) 26-445-02
LBC SUN HR 12'A (81 kHz) 26-445-03

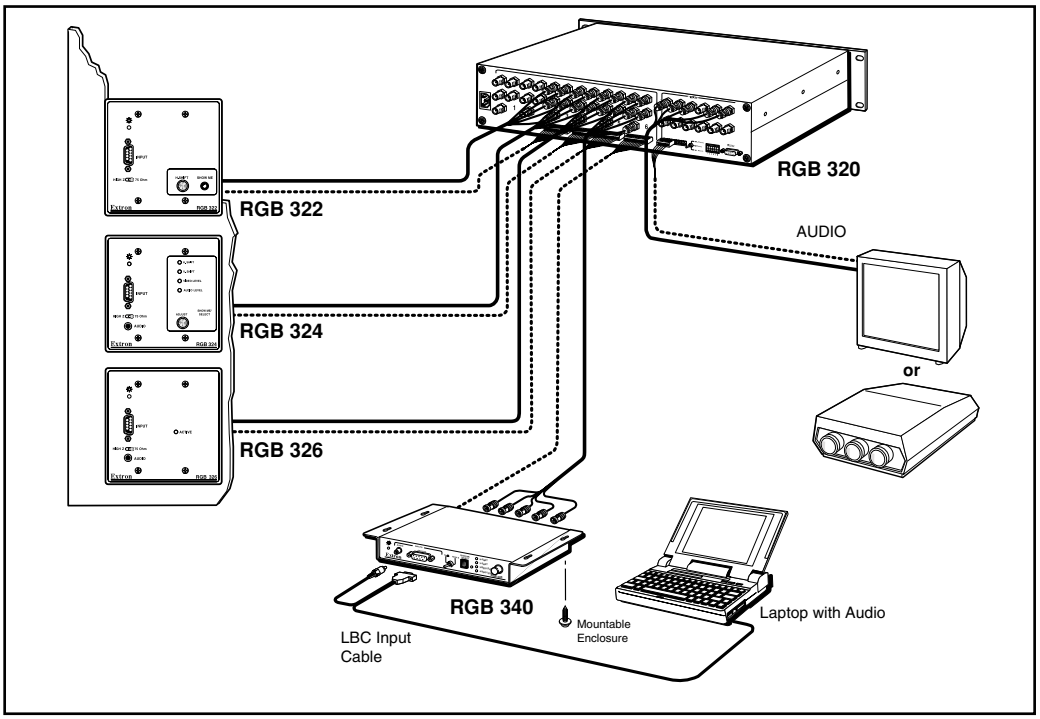
Installation Cable

Extron's Install Plenum is a unique cable that incorporates computer-video, composite video, audio, control and power in one single jacketed plenum rated cable. Because the install cable includes (6) mini coax, (4) 22 gauge twisted pair and (3) 20 gauge wires, it is a perfect replacement for installations where two or three separate cables have been used before. With the install cable not only can RGBS be distributed from a wall plate/podium to a rack but also audio, video and control – all in one cable!

Bulk Install Plenum, 500' HR 22-111-03
Bulk Install Plenum, 1000' HR 22-111-04

BNC M-F Extension Kit 5½" 70-113-01
3.5mm Stereo plug 10-306-01

APPLICATION DIAGRAM



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